

IAP16 Rec'd PCT/PTO 18 SEP 2006

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10/593139

electro-optical converters if, by way of example, an electrostatically charged person inserts a finger into the interior of the connector and touches or just comes close to the optical fiber sections.

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This risk may on first impression appear to be insignificant since the optical fibers are composed of plastic, having an extremely low conductivity.

10 However, even the conductivity of the plastic fiber section e.g. at its surface may suffice if the flashover voltage is high enough.

15 This risk occurs in particular in the case of MOST® connectors, as the fiber section in these connectors is inserted into a plastic sleeve. Furthermore, in the area of automotive engineering the connector may be exposed to moisture that may collect between the fiber section and the sleeve and may increase the conductivity by orders of magnitude. This considerably increases the risk of a voltage flashover to the converter.

20 It is also known to provide an EMI shield against electromagnetic radiation for optical modules, e.g. from US 6,335,869 to Branch et al. and US 2003/056802 to Togami et al. However, they do not provide adequate protection against electrostatic discharge of inserting an item into the receptacle of the connector and touching or just coming close to the optical fiber sections.

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All in all the previously known solutions in this regard are subject to improvement. On the other hand, in this competitively contested market, even apparently slight qualitative and/or cost-related advantages often suffice to obtain a decisive lead over the competitors in the market.

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Summary of the Invention

Therefore, an object of the invention is to provide an optical connector which is robust to withstand even difficult conditions of use and, in particular, is resistant to voltage flashovers.

Patent Claims:

1. Optical connector (1), in particular for establishing multimedia-connections in a motor vehicle according to the MOST-standard, comprising:
 - 5 a dielectric connector housing (40) with a receptacle (50) for mating connection with a complementary connector,
 - 10 at least an optical connection element (94, 96) in said connector housing (40) and for mating connection with a complementary optical connection element of the complementary connector,
 - 15 at least an electro-optical component (54, 56) with electronic circuits and
 - 20 ESD protection means (30)
 - wherein said ESD protection means (30) comprises at least one discharge section (34, 36, 38) extending towards the receptacle and having a free end (34a, 36a, 38a) being exposed to the interior of the receptacle (50).
 2. Optical connector (1) according to Claim 1,
 - 25 wherein the ESD protection means (30) comprises an electrically conductive discharge finger (64, 66, 68) terminating in said discharge section (34, 36, 38) and the discharge section (34, 36, 38) is arranged in the vicinity of the optical connection element (94, 96), in such a way that the discharge finger (64, 66, 68) forms a lightning arrester for protection of the optical connection element (94, 96).
 3. Optical connector (1) according to Claim 1 or 2,
 - 35 wherein the discharge section (34, 36, 38) extends essentially parallel to the introduction direction (E) of the complementary connector.

4. Optical connector (1) according to one of claims 2 or 3,
wherein the receptacle includes a cavity (49)
having, at a front side, an opening for introducing the
complementary connector and
5 wherein the discharge finger (64, 66, 68) is
arranged at a rear side of the cavity (49) opposite to
the front side.
- 10 5. Optical connector (1) according to one of the preceding
claims,
 wherein the cavity (49) is bounded by a rear wall
(40b) at its rear side and the ESD protection means (30)
penetrates the rear wall (40b).
- 15 6. Optical connector (1) according to one of the preceding
claims,
 wherein the ESD protection means (30) comprises an
electrically conductive discharge finger (64, 66, 68)
20 terminating in said discharge section (34, 36, 38) and
the rear wall (40b) has an opening into which the
discharge section (34, 36, 38) engages.
- 25 7. Optical connector (1) according to Claim 6,
 wherein the discharge section (34, 36, 38) extends
through the opening and terminates essentially flush
with the rear wall (40b).
- 30 8. Optical connector (1) according to one of the preceding
claims,
 wherein the ESD protection means (30) comprises a
plurality of discharge fingers (64, 66, 68).
- 35 9. Optical connector (1) according to one of the preceding
claims,

wherein the ESD protection means (30) has at least a first and second discharge finger (64, 66) with in each case an arm section extending transversely with respect to the introduction direction (E) of the complementary connector,

5 wherein said electro-optical component is a first electro-optical component (54) and the connector comprises a second electro-optical component (56), and

10 wherein the arm sections of the first and second discharge fingers (64, 66) are assigned to the first and second electro-optical component, respectively.

10. Optical connector (1) according to Claim 9,

15 wherein the first and second discharge fingers (64, 66) in each case have a connecting section which extends along the introduction direction (E) of the complementary connector and at which the respective arm section is suspended, which is in each case adjoined by at least one discharge section (34, 36, 38).

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11. Optical connector (1) according to Claim 9 or 10,

wherein the arm sections of the first and second discharge fingers (64, 66) extend along a front side of the first and second electro-optical component,
25 respectively.

12. Optical connector (1) according to one of Claims 9 to 11,

30 wherein the first and second discharge fingers are offset transversely with respect to the introduction direction (E).

13. Optical connector (1) according to one of Claims 9 to 12,

35 wherein the first and second discharge fingers (64,

66) are formed asymmetrically.

14. Optical connector (1) according to one of the preceding claims,

5 wherein said optical connection element (94, 96) is a first optical connection element (94, 96) and the connector has at least a second optical connection element (94, 96) for mating connection with a further complementary optical connection element of the complementary connector,

10 wherein the ESD protection means (30) has at least three discharge fingers (64, 66, 68) with in each case a discharge section (34, 36, 38),

15 wherein the first optical connection element is arranged between a first and a third of the discharge sections (34, 38),

 wherein the second optical connection element is arranged between a second and the third of the discharge sections (36, 38), and

20 wherein the third discharge section (38) is arranged between the first and second optical connection elements.

15. Optical connector (1) according to Claim 14,

25 wherein the receptacle has a cavity (49), the cavity (49) has at a front side an opening for introducing the complementary connector, the cavity (49) is bounded by a rear wall (40b) at a rear side opposite to the front side, and the rear wall (40b) has at least 30 three openings through which in each case one of the discharge sections extends.

16. Optical connector (1) according to Claim 14 or 15,

35 wherein the first, second and third discharge fingers are stamped and formed in one piece from sheet

metal.

17. Optical connector (1) according to one of the preceding claims,
5 wherein the ESD protection means (30) has a dedicated connection element for connection to an electrical circuit board.
18. Optical connector (1) according to one of the preceding claims,
10 wherein the connector has an external electrical shielding (2).
19. Optical connector (1) according to Claim 18,
15 wherein the external electrical shielding (2) penetrates the connector housing (40).
20. Optical connector (1) according to Claim 18 or 19,
20 wherein the shielding (2) is designed in the form of an essentially U-shaped clamp which engages around the connector housing (4) rearwards.
21. Optical connector (1) according to Claim 20,
25 wherein the ESD protection means (30) is arranged essentially centrally in the U-shaped clamp.
22. Optical connector (1) according to Claim 20 or 21,
30 wherein the clamp has integrally formed press-on lugs which are biased against the rear side of the electro-optical components in order to apply force to the latter counter to the introduction direction (E).
23. Optical connector (1), in particular for establishing multimedia-connections in a motor vehicle according to
35 the MOST-standard and in particular according one of the

preceding claims, comprising:

a dielectric connector housing (40) with a receptacle (50) for mating connection with a complementary connector,

5 at least an optical connection element (94, 96) in said connector housing (40) and for mating connection with a complementary optical connection element of the complementary connector,

10 at least an electro-optical component (54, 56) with electronic circuits and

at least an electrically conductive protection element (30) against electrical discharges in the region of the receptacle (50),

15 wherein said protection element (30) penetrates said connector housing (40) from the rear side.

24. Use of an ESD protection element (30) with an optical connector (1), in particular according to the MOST-standard, the optical connector (1) having a receptacle (50) in a connector housing (40) for mating connection with a complementary connector and having optical connection elements (94, 96) which are positioned in

20 said receptacle, wherein said ESD protection element (30) is provided in the region of the optical connection elements (94, 96) and comprises at least one discharge section (34, 36, 38) extending towards said receptacle and having a free end (34a, 36a, 38a) being exposed to

25 the interior of the receptacle (50), thereby preventing an electrostatic discharge from an object which is introduced into said receptacle (50) onto said optical connection elements (94, 96) within said connector.

30 25. Use according to claim 24,

35 wherein said protection element penetrates said connector housing (40).